

Buildings for  
the 21st Century

## Better Methods Deliver Big Benefits for Homebuilders

### THE BENEFITS

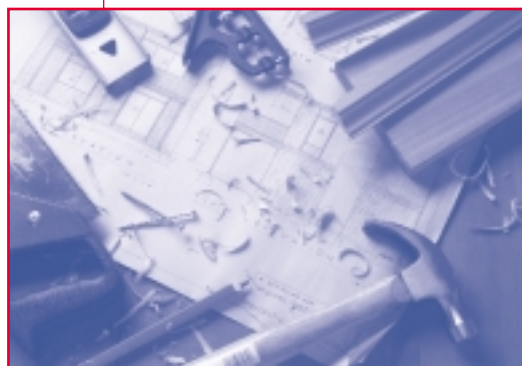
Building America helps homebuilders:

- Reduce construction costs and waste by as much as 50 percent
- Lower their customers' energy bills
- Reduce callbacks and warranty claims
- Offer more options for the same price through cost-saving system trade-offs
- Provide new product opportunities to manufacturers and suppliers
- Learn from other builders
- Stand out in the marketplace

### *The Program*

The U.S. Department of Energy's Building America Program is reengineering the American home for energy efficiency and affordability. Building America works with the residential building industry to develop and implement innovative building processes and technologies — innovations that save builders and homeowners millions of dollars in construction and energy costs. This industry-led, cost-shared partnership program uses a systems engineering approach to reduce energy use, construction time, and construction waste by as much as 50 percent. The program aims to:

- Build 2,000 of these efficient, affordable homes by the year 2000
- Facilitate the adoption of a systems engineering approach to design and construction in 70 percent of the new housing market within 10 years



### *The Approach*

Building America's systems engineering approach unites segments of the building industry that have traditionally worked independently of one another. It forms teams of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades. There are four teams comprising more than 80 different companies:

- Integrated Building and Construction Solutions (IBACOS)
- Consortium for Advanced Residential Buildings (CARB)
- Building Science Consortium (BSC)
- Hickory Consortium

The teams design houses from the ground up, considering the interaction between the site, building envelope, mechanical systems, and other factors. This approach enables the teams to incorporate energy-saving strategies at little or no extra cost: new techniques for tightening the building envelope, for example, enable builders to install smaller, less expensive heating and cooling systems. These savings can then be reinvested in high-performance windows that further reduce energy use and costs.

#### *Systems engineering views*

*the house as an integrated system of  
components and incorporates improvements that  
all together yield optimal energy  
and cost savings, quality, and performance.*





## BUILDINGS FOR THE 21ST CENTURY

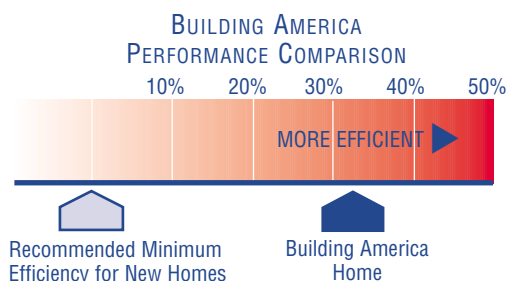
Buildings that are more energy-efficient, comfortable, and affordable ... that's the goal of DOE's Office of Building Technology, State and Community Programs (BTS). To accelerate the development and wide application of energy efficiency measures, BTS:

- Conducts R&D on technologies and concepts for energy efficiency, working closely with the building industry and with manufacturers of materials, equipment, and appliances
- Promotes energy/money saving opportunities to both builders and buyers of homes and commercial buildings
- Works with State and local regulatory groups to improve building codes, appliance standards, and guidelines for efficient energy use
- Provides support and grants to States and communities for deployment of energy-efficient technologies and practices

## The Results

Each Building America team is constructing test homes and developing community-scale projects that incorporate its systems innovations. Over 60 test homes have been built by the teams to date, and more than 376 production-scale houses will be complete by the end of 1998.

After the test homes are constructed, DOE's National Renewable Energy Laboratory provides feedback on the systems-level



The Building America Program is the pre-eminent community/builder resource for energy-efficient, affordable housing under the Federal Government's Partnership for Advancing Technology in Housing (PATH). Building America houses also are certified as Energy Star through the cooperative guidelines set by the Environmental Protection Agency and the Department of Energy.

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